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Pearl culture in abalone

Aquaculture Department, Southeast Asian Fisheries Development Center

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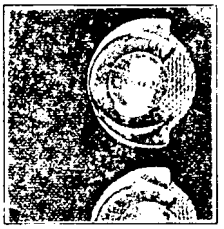

Pearl culture in the abalone *Haliotis* is carried out in Japan, Korea, Canada, and the United States. The quality of abalone pearls, as determined by surface texture, is superior to those produced in freshwater mussels and comparable to those of the marine pearl oyster *Pinctada*. Abalone pearls are priced at about US$300 for a 13-millimeter AAA grade semispherical or mabe piece.

The farmer can grow pearls in 6-8 cm abalones for a year or so. This size of abalone, however, takes about 3 years to grow. Hatchery-bred abalone seed cost Canadian $16 per pound. Pearl culture can take 3-18 months depending on water temperature, and age and food of abalone. But the abalone can be sold as food, and production costs can be more than offset by the price of the pearls.

Pearls are produced by nucleation, where plastic, soapstone, or mother-of-pearl is slipped beneath the mantle epithelium of the abalone. The nucleus must be secured against the movement of the abalone's muscular foot. Following nucleation, the mobile abalones are placed in a secure enclosure to prevent their escape. In British Columbia and California, screened plastic drums suspended in the sea are used. Abalones must be fed at least weekly with the kelp *Macrocystis,* and the seaweeds *Gracilaria, Laminaria*, and *Nereocystis*. Fouling organisms, sea stars, and octopuses must be regularly removed from the culture area.

Within several days following nucleation, a thin chalky layer is secreted against and around the nucleus. Then, a thick, tan-brown layer of conchiolin is deposited. Conchiolin forms the foundation for a layer of porcelain-like, prismatic aragonite crystals, and a layer of nacreous aragonite. In a properly cultured abalone pearl, the conchiolin is about 1 mm thick. In Vancouver, semispherical pearls can be cultured in *Haliotis kamtschatcana* to a diameter of 17 mm. In Japan, pearls can be grown to 22 mm in *Haliotis discus*.

Source: P Fankboner. *Pearl culture in abalone.* **INFOFISH International** 4/91.

New Zealand

A mussel farm is usually 3 hectares with 10 surface longlines. The farm is sited in areas with a current flow of 0-4 knots, in unexposed, semi-enclosed bays and moderately exposed open seas with depths of 5-40 meters. Spats are collected where they are abundant by "catching ropes" and transferred to farms. It takes 1-6 months for the mussel to grow to the ideal reseeding size of 10-20 mm. The mussels take 10-12 months to grow to market sizes in reseeded lines.

Source: P Large. *Mussel culture success.* **INFOFISH International** 4/89.

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cumb easily to diseases and parasites. Mass mortalities of fish have occurred in a number of cage farms.

Cage culture booms, nonetheless

In spite of these problems, sea bass farming has so far managed to sustain its boom in Malaysia. In 1989, the sea bass production of 1538 tons was 21% higher than the preceding year. In fact, production has been increasing steadily over the last 5-6 years. With good management and attention to some of the problems being faced, there is every likelihood of a further increase in production in the future.

Source: T Singh. *Malaysia enjoys the sea bass boom.* **INFOFISH International** 2/91.